

Communicate Your Understanding

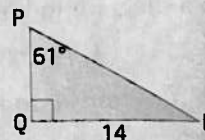
C1 Explain why the primary trigonometric ratios depend only on a given angle and not the size of a right triangle.

C2 a) Create a problem for which you would need to apply the cosine function on your calculator. Solve the problem and explain each step.

b) Repeat part a) for the inverse sine function of your calculator.

C3 a) List the steps you would use to solve $\triangle PQR$.

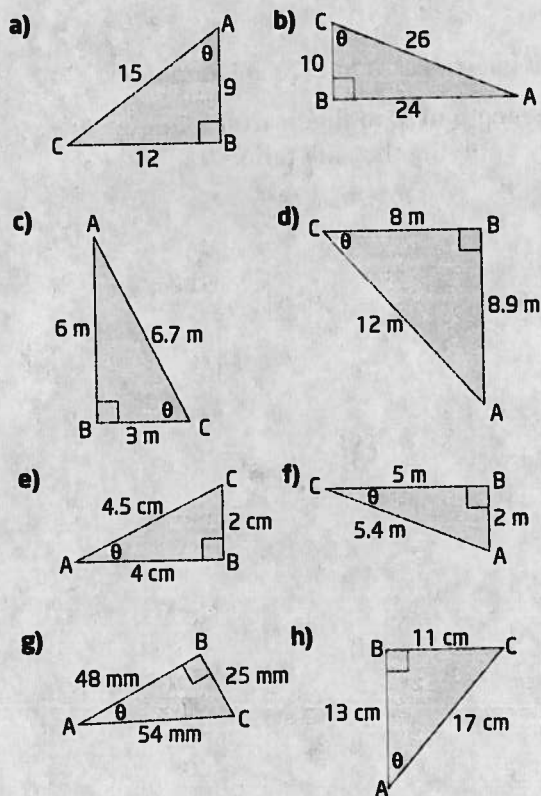
b) List a different set of steps to solve $\triangle PQR$ using another method.



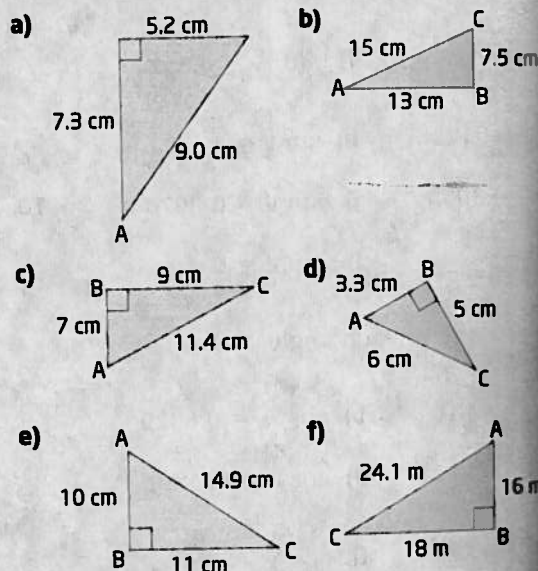
Practise

For help with questions 1 and 2, see Example 1.

1. Find $\sin \theta$, $\cos \theta$, and $\tan \theta$ for each triangle, expressed as fractions in lowest terms.



2. Find the three primary trigonometric ratios for $\angle A$, to four decimal places.



For help with questions 3 to 5, see Example 2.

3. Evaluate each of the following with a calculator, rounded to four decimal places.

a) $\sin 35^\circ$

b) $\sin 45^\circ$

c) $\sin 60^\circ$

d) $\sin 37^\circ$

e) $\sin 25^\circ$

f) $\sin 0^\circ$

g) $\sin 89^\circ$

h) $\sin 30^\circ$

4. Evaluate each of the following with a calculator, rounded to four decimal places.

- a) $\cos 80.2^\circ$ b) $\cos 45^\circ$
 c) $\cos 30^\circ$ d) $\cos 60^\circ$
 e) $\cos 89^\circ$ f) $\cos 0^\circ$
 g) $\cos 5^\circ$ h) $\cos 83^\circ$

5. Compare your results to questions 3 h) and 4 d). Use a diagram to help explain these results.

For help with questions 6 to 9, see Example 3.

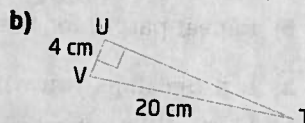
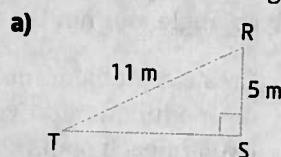
6. Find the measure of each angle, to the nearest degree.

- a) $\sin \theta = 0.8933$ b) $\sin \theta = 0.5032$
 c) $\sin P = \frac{1}{2}$ d) $\sin S = \frac{2}{3}$
 e) $\sin \theta = \frac{3}{4}$ f) $\sin A = 0.9511$
 g) $\sin \theta = 0.7123$ h) $\sin \theta = \frac{2}{5}$
 i) $\sin X = 0.3035$ j) $\sin \theta = 0.9976$
 k) $\sin V = \frac{1}{8}$ l) $\sin \theta = 0$

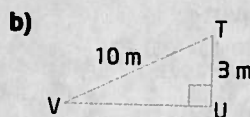
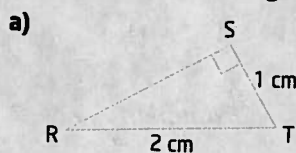
7. Find the measure of each angle, to the nearest degree.

- a) $\cos \theta = 0.4481$ b) $\cos A = 0.6329$
 c) $\cos C = \frac{5}{11}$ d) $\cos \theta = 0.3432$
 e) $\cos Q = 0.8871$ f) $\cos M = \frac{3}{14}$
 g) $\cos \theta = \frac{1}{6}$ h) $\cos \theta = 0.6215$
 i) $\cos B = \frac{15}{16}$ j) $\cos X = 0.0193$
 k) $\cos \theta = 0$ l) $\cos J = \frac{1}{2}$

8. Calculate $\sin T$ in each triangle. Then, find $\angle T$, to the nearest degree.



9. Calculate $\cos T$ in each triangle. Then, find $\angle T$, to the nearest degree.



For help with questions 10 to 14, see Example

10. Find the length of x , to the nearest tenth of a unit, by applying the sine ratio.

